College Algebra (Math 1310) Course Objectives

Chapter.Section	Objective and Examples	Material Covered by End of Week #
2.1	**Given two points, find an equation of the line passing through them.** Example. Find an equation of the line that passes through (2, -1) and (-3, 5).	2

Chapter.Section	Objective and Examples	Material Covered by End of Week #
1.3	**Given an equation of a line, sketch the graph of the line. Given a graph of a line, find an equation of the line. Find points of intersection of two lines.** Example. Sketch the graph of $y=(2/3)x + 5$. Example. Sketch the graph of $4x + 3y = 12$.	2

Chapter.Section	Objective and Examples	Material Covered by End of Week #
6.1	**Find points of intersection of two lines.** Example. Find the point of intersection: $2x-3y=6$ $x-4y=-2$	2

Chapter.Section	Objective and Examples	Material Covered by End of Week #
2.2	**Write an equation to represent a situation and use it to answer questions about the situation.** Example: There are twice as many nickels as quarters in a piggy bank. If the value of these coins is $29.75, how many quarters are in the piggy bank?	3

Chapter.Section	Objective and Examples	Material Covered by End of Week #
2.3	**Solve a quadratic equation by factoring, completing the square and by using the quadratic formula.** Example: Solve $2x^2+7x+3=0$ Example: Solve: $x^2+2x-5=0$	3

Chapter.Section	Objective and Examples	Material Covered by End of Week #
2.4	**Add, subtract, multiply and divide complex numbers.** Example: Find the sum, difference, product and ratio of (2+3i) and (5-4i).	4

Chapter.Section	Objective and Examples	Material Covered by End of Week #
2.6	**Find the solution of a linear inequality in one variable and represent it using interval notation.** Example: Solve: $-1<2x-5<3$	4

Chapter.Section	Objective and Examples	Material Covered by End of Week #
2.8	**Solve equations and inequalities involving absolute value.** Example: Solve: $\|3x-2\|>5$.	5

Chapter.Section	Objective and Examples	Material Covered by End of Week #
3.1	**Use function notation.** Example: Suppose $f(x) = 3x^2 - 5x + 4$. Find $f(3), f(0), f(p^2)$ and $f(x+h)$.	7

Chapter.Section	Objective and Examples	Material Covered by End of Week #
3.2	**Graph a function by plotting points.** Example: Make a table of values and graph $f(x) = \lvert x+2 \rvert$.	7

Chapter.Section	Objective and Examples	Material Covered by End of Week #
3.3	**Solve problems involving variation.** Example: In a certain area, the property tax on a house is directly proportional to its assessed value. A house that is assessed at $125,000 has a property tax of $2950. Find the property tax on a house that has an assessed value of $175,000.	7

Chapter.Section	Objective and Examples	Material Covered by End of Week #
3.4	**Sketch the graph of function related to basic functions (such as the cubing or square-root functions) by translations or reflections.** Example: Sketch $f(x) = -(x+4)^3 - 2$ Example: Sketch $f(x) = \sqrt{3-x} + 4$	7

Chapter.Section	Objective and Examples	Material Covered by End of Week #
3.5	**Rewrite quadratic functions in standard form and graph them.** Example: Rewrite the function $f(x) = 2x^2 + 20x - 3$ in standard form and sketch.	8

Chapter.Section	Objective and Examples	Material Covered by End of Week #
3.6	**Find compositions of functions.** Example: Given $f(x) = x^2 - 3$ and $g(x) = 2x + 5$, find $f \circ g$ and $g \circ f$.	8

Chapter.Section	Objective and Examples	Material Covered by End of Week #
3.7	**Determine if a function is one-to-one and find the inverse of a one-to-one function.** Example: Determine if $f(x)=\frac{x+3}{x-4}$ is a one-to-one function. If it is, find $f^{-1}(x)$.	9

Chapter.Section	Objective and Examples	Material Covered by End of Week #
4.1	**Sketch the graph of a polynomial function.** Example: Sketch the graph of $f(x)=-x(x+4)^2(x-1)^3$	10

Chapter.Section	Objective and Examples	Material Covered by End of Week #
4.2	**Divide polynomials both by long dividing and using synthetic division.** Example: Find the quotient and remainder for $\frac{2x^4 - 8x^2 + 3x - 5}{x - 5}$ by using polynomial long division. Example: Find the quotient and remainder for $\frac{2x^4 - 8x^2 + 3x - 5}{x - 5}$ by using synthetic division.	10

Chapter.Section	Objective and Examples	Material Covered by End of Week #
4.3	**Find polynomials with specified roots, degrees and constant coefficients.** Example: Find a polynomial of degree three with roots 1, -2 and 5 and constant coefficient 20.	11

Chapter.Section	Objective and Examples	Material Covered by End of Week #
4.4	**Find the intercepts, asymptotes and holes for a rational function and sketch the graph.** Example: Find the intercepts, asymptotes and holes for $f(x)=\frac{x^2+2x-3}{x^2-3x+2}$ and sketch.	11

Chapter.Section	Objective and Examples	Material Covered by End of Week #
5.1, 5.2	**Sketch graphs of exponential functions, including the natural exponential function, and of functions related to them using translations and reflections.** Example: Sketch $f(x)=-e^{x-4}+1$.	12

Chapter.Section	Objective and Examples	Material Covered by End of Week #
5.3	**Sketch graphs of logarithmic functions, including the natural log function, and of functions related to them using translations and reflections.** Example: Sketch $f(x)=\ln(x-4)+3$.	13

Chapter.Section	Objective and Examples	Material Covered by End of Week #
5.4	**Use properties of logs to simplify and expand expressions involving logs.** Example: Rewrite the following expression as a single log with a coefficient of 1: $2\ln(x+2)+\ln x-3\ln(x-4)$. Example: Rewrite so that your answer contains, sums, differences and/or multiples of logarithms. Your answer should not contain logarithms of any product, quotient or power. $\log\left(\frac{x^2y^3}{z^{\frac{1}{2}}}\right)$	14

Chapter.Section	Objective and Examples	Material Covered by End of Week #
5.2, 5.5	**Solve equations involving logarithms or exponentials.** Example: Solve $\log_4 x+\log_4(x+6)=2$ Example: Solve $3^x=5$	14